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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/420,275	10/18/1999	MIGUEL DAJER	9-3-29	2584

7590 06/16/2004

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EXAMINER	
RAMOS FELICIANO, ELISEO	
ART UNIT	**PAPER NUMBER**
2681	20

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/420,275	DAJER ET AL.	
	Examiner	Art Unit	
	Eliseo Ramos-Feliciano	2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *19*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on March 19, 2004 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (US Patent Number 6,400,966).

Regarding **claims 1 and 17**, Andersson et al. discloses a base station (e.g. 200) for use in a wireless communication system (Figures 2 and 3) - CDMA (column 11, lines 9-10). The base station's Transmitter 216 includes a plurality of channel unit boards (e.g. BBTX-1, BBTX-2, ... BBTX-N) each including a plurality of channel elements (boxes labeled "Carrier 1 to N1 " - Figure 9A, each containing "Resource 1 to M6" in combination with "COMB") as depicted in Figures 9-12. A given channel unit board (e.g. BBTX-1) includes a multiplexer (MUX) which is operative to implement multi-carrier / multi-selector channel pooling by assigning a given one of

the channel elements of that board to any one of the multiple carriers (e.g. Carrier 1, Carrier 2, ... Carrier N1, etc.) of the system, as depicted in Figures 4B, 7B and 9A. See the abstract, column 5, lines 1-12 & 54-63, column 6, lines 34-51, column 8, line 6 to column 10, line 22.

The term "subset" is one or more, but also includes all of the elements of the total set, as well as none of them. All of these options in the alternative form. Appellant argues a particular instance, that is, "at least one". The claim(s) exclude the last one (empty or none). The current explanation is based on the alternative "at least all" because it falls within the scope of the claimed and defined "subset".

Figure 9A of Andersson et al. reads on the claim as follows: The plurality of channel unit boards are BBTX-1 to BBTX-N. Each one includes a plurality of channel elements that are illustrated in Figure 9A as the "boxes" labeled "Carrier 1 to N l", each containing "Resource 1 to M6" in combination with "COMB". The plurality of channel elements provide processing operations for signals assigned to multiple carriers (Carrier 1 to N1) of the communication system. Each of at least a subset (all those boxes inside BBTX-1, but excluding MUX) of the channel elements of at least one channel unit board (BBTX-1, for example) is assignable to each of a plurality of carriers (Carrier 1 to N l) of the system.

However, Andersson et al. fails to disclose that at least one of the channel unit boards is assignable to each of a plurality of carriers and a plurality of antenna sectors of the system as claimed in a single embodiment.

But, in an analogous embodiment (Figure 2), Andersson et al. teaches that Transmitter 116, is assignable to each of a plurality of antenna sectors 102 (RF/Sector 1 to N) of the system. Since, as explained above, Transmitter 216 (Figure 9A) includes at least one of the channel unit

boards assignable to each of a plurality of carriers, the substitution of Transmitter 216 (Figure 9A) by Transmitter 116 (Figure 2) would have been obvious for a cost-effective hardware implementation, as suggested by Andersson et al.'s disclosure (abstract).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute Transmitter 216 (Figure 9A) by Transmitter 116 (Figure 2) so as to achieve channel unit boards assignable to each of a plurality of carriers and a plurality of antenna sectors of the system as claimed, because this would enable the signal processing resources to be flexibly allocated and cost-effective hardware implementation, as suggested by Andersson et al.'s disclosure.

With respect to **claims 8, 15, and 18**, Andersson et al. discloses a base station (e.g. 200) for use in a wireless communication system (Figures 2 and 3) - CDMA (column 11, lines 9-10). The base station's Transmitter 216 includes a plurality of channel unit boards (e.g. BBTX-1, BBTX-2, ... BBTX-N) each including a plurality of channel elements (boxes labeled "Carrier 1 to N1 " - Figure 9A, each containing "Resource 1 to M6" in combination with "COMB") as depicted in Figures 9-12. A given channel unit board (e.g. BBTX-1) includes a multiplexer (MUX) which is operative to implement multi-carrier / multi-selector channel pooling by assigning a given one of the channel elements of that board to any one of the multiple carriers (e.g. Carrier 1, Carrier 2, ... Carrier N1, etc.) of the system, as depicted in Figures 4B, 7B and 9A. See the abstract, column 5, lines 1-12 & 54-63, column 6, lines 34-51, column 8, line 6 to column 10, line 22.

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Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute Transmitter 216 (Figure 9A) by Transmitter 116 (Figure 2)

so as to achieve channel unit boards assignable to each of a plurality of carriers and a plurality of antenna sectors of the system as claimed, because this would enable the signal processing resources to be flexibly allocated and cost-effective hardware implementation, as suggested by Andersson et al.'s disclosure.

In addition, different channel elements of a channel unit board are "controllably assigned" to different carriers of the system; see column 10, lines 13-22 and Figures 4B, 713, 9A, etc.

Regarding **claims 2-5, 7, 9-12, and 14**, Andersson et al. discloses everything claimed as applied above (see rejection of *claims 1 and 8*). In addition, Andersson et al. teaches I and Q signals generated using a particular arrangement, as claimed, as shown in Figures 4B, 7B and 9A (which reads "I, Q to TRXTX part"). As illustrated, the figures show single line buses, but it is apparent that each bus contains separate I and Q signals. See column 9, line 65. It should be noted that the present disclosure uses the same nomenclature and addresses I and Q signals in the same manner that Andersson et al. does. For example, Figures 4-6 of the present disclosure show single line buses (Figure 4 far right "I/Q buses from other channel cards"; Figure 5 bottom left "Carrier N I/Q" and "Upstream I/Q bus"; Figure 6A "N Carrier/sector I/Q Bus"; etcetera) wherein each bus contains separate I and Q signals.

The multiplexer (MUX) is operative to connect a given one of the channel elements to an I and Q signal bus; Figure 9A. The I and Q signals from different channel unit boards are combined using a "Combiner"; Figure 11.

N channel elements can be assigned to N carriers in N sectors; column 10, lines 13-22 and the Figures. The disclosed wireless communication system is a CDMA system operating in

either IS-95-A, B or C, with or without OTD, MC CDMA-2000 (WCDMA), or UNITS; see column 1, line 58 to column 2, line 25, and column 11, lines 712.

As to the limitation "wherein each of at least a subset of the channel unit boards includes a total of N channel elements, and each of the channel elements may be assigned to one of up to N carriers of the system", Andersson et al. meets that claim language as follows: each of at least a subset (at least one; e.g. BBTX-1) of the channel unit boards includes a total of N channel elements (labeled "Carrier 1 to N1", each one containing "Resource 1 to M6" in combination with "COMB"), and each of the channel elements may be assigned to one of up to N carriers (e.g. only one; Carrier 1) of the system.

Regarding **claims 6 and 13**, Andersson et al. discloses everything claimed as applied above (see claims 1 and 8). In addition, Andersson et al.'s invention includes a control computer operative to generate one or more control signals for controlling assignment of the channel elements of the channel unit boards to the plurality of carriers of the system; see the "Channel Selection" input bus in Figure 12.

With respect to **claim 16**, Andersson et al. discloses a base station (e.g. 200) for use in a wireless communication system (Figures 2 and 3) - CDMA (column 11, lines 9-10). The base station's Transmitter 216 includes a plurality of channel unit boards (e.g. BBTX-1, BBTX-2, ... BBTX-N) each including a plurality of channel elements (boxes labeled "Carrier 1 to N1 " - Figure 9A, each containing "Resource 1 to M6" in combination with "COMB") as depicted in Figures 9-12. A given channel unit board (e.g. BBTX-1) includes a multiplexer (MUX) which is operative to implement multi-carrier / multi-selector channel pooling by assigning a given one of the channel elements of that board to any one of the multiple carriers (e.g. Carrier 1, Carrier 2, ...

Carrier N1, etc.) of the system, as depicted in Figures 4B, 7B and 9A. See the abstract, column 5, lines 1-12 & 54-63, column 6, lines 34-51, column 8, line 6 to column 10, line 22.

The term "subset" is one or more, but also includes all of the elements of the total set, as well as none of them. All of these options in the alternative form. Appellant argues a particular instance, that is, "at least one". The claim(s) exclude the last one (empty or none). The current explanation is based on the alternative "at least all" because it falls within the scope of the claimed and defined "subset".

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However, Andersson et al. fails to disclose that at least one of the channel unit boards is assignable to each of a plurality of carriers and a plurality of antenna sectors of the system as claimed in a single embodiment.

But, in an analogous embodiment (Figure 2), Andersson et al. teaches that Transmitter 116, is assignable to each of a plurality of antenna sectors 102 (RF/Sector 1 to N) of the system. Since, as explained above, Transmitter 216 (Figure 9A) includes at least one of the channel unit boards assignable to each of a plurality of carriers, the substitution of Transmitter 216 (Figure

9A) by Transmitter 116 (Figure 2) would have been obvious for a cost-effective hardware implementation, as suggested by Andersson et al.'s disclosure (abstract).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute Transmitter 216 (Figure 9A) by Transmitter 116 (Figure 2) so as to achieve channel unit boards assignable to each of a plurality of carriers and a plurality of antenna sectors of the system as claimed, because this would enable the signal processing resources to be flexibly allocated and cost-effective hardware implementation, as suggested by Andersson et al.'s disclosure.

In addition, Andersson et al.'s invention includes a control computer operative to generate one or more control signals for controlling assignment of the channel elements of the channel unit boards to the plurality of carriers of the system; see the "Channel Selection" input bus in Figure 12.

As to **claims 19-23**, they are an obvious variation form of claims 1-18. Therefore, they are rejected for the same reasons shown above. For clarification: the above explained multiplexer (MUX) reads as the claimed "signal combiner element" and is "controllable" by the explained "control computer". Figure 9A exhibits a set of BBTXs each including one MUX. These MUXs in combination read as the claimed "set of controllable signal combiners". For example, the circuitry "TRX-RF" that contains the adder (E) depicted in Figure 12 reads as the claimed "multi-carrier combiner".

It should be noted that Figures 9A and 12 are related as depicted in Figure 3. Figure 9A is component 216 of which output is input to component 202 depicted as Figure 12. The combination of all multiplexers (MUX) of each BBTX (1 to N) reads as the claimed 66 set of

controllable signal combiners". The circuitry "TRX-RF", that contains the adder (E), depicted in Figure 12 reads as the claimed "multi-carrier combiner". Thus, the multi-carrier combiner includes a plurality of inputs, shown in Figure 12 as Frequency 1 and 2 each comprising I and Q, and an additional input, shown in Figure 12 as "Channel Selection" input bus.

Claims 24-27 define a receiver sub-unit of the claimed base station, while claims 19-23 define a transmitter sub-unit of the claimed base station. Claims 24-27 are at least obvious in view of claims 19-23 because every transmission needs and implies a reception. Nevertheless, Andersson et al. discloses both the transmitter (Figures 9-12) and the receiver (Figures 4-8) sub-units of the base station (Figure 3). The same explanation found above is applied herein. The demultiplexer (DEMUR) shown in Figures 4-8 reads as the claimed "controllable selector".

Conclusion

4. Any inquiry concerning this communication from the examiner should be directed to Eliseo Ramos-Feliciano whose telephone number is 703-305-0078. The examiner can normally be reached from 8:00 a.m. to 5:30 p.m. on 5-4/9 1st Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Erika A. Gary, can be reached on (703) 308-0123. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ELISEO RAMOS-FELICIANO
PATENT EXAMINER 6/17-4

ERF/erf
June 10, 2004